

SUSTAINABLE NUCLEAR ENGINEERING - MEDICAL APPLICATIONS

MASTER OF SCIENCE

ACCREDITATION

This Master is accredited by the Ministry of Higher Education and Research.

National Accreditation Reference: 1701324R

Mention

Nuclear Engineering

KEY WORDS

Nuclear Medicine, Radioprotection, Medical physics, Dosimetry, Project Management

SCHOOL OFFERING THE MASTER

IMT Atlantique, a «Grande Ecole» which is part of the Institut Mines-Telecom, a leading French higher Education and Research Institution in Engineering, with 12,500 students.

LOCATION

This MSc program is offered on Nantes campus. Nantes is France's sixth-largest city and capital of the third-largest industrial region. Nantes lies just 50 km from the Atlantic coast; Paris is 2 hours away by high-speed train. Nantes is a dynamic city, which has been frequently recognized for its quality of life. The campus provides all the students facilities: student's residence, sports facilities, wireless network, library, associations, etc.

INDUSTRIAL PARTNERS

CEA, ARRONAX, GE Healthcare...

LANGUAGE OF TEACHING

Year 1 in English,
Year 2 in French

ENVIRONMENT

Nantes is the main center of Western France in the field of medical physics and nuclear medicine, thanks to the presence of important research centers such as the Research laboratory SUBATECH, the cyclotron ARRONAX, the university Hospital of Nantes, etc. Students can benefit from more than ten years of teaching team experience and from the adapted Research environment.

COURSE AIMS

This Master develops fundamental scientific, technical and industrial knowledge of the different nuclear technologies used in the medical field. It has a particular focus on the safety and radioprotection, to be considered in the management of a large project in this field.

PROGRAM

Scientific and technical modules:

- > Physics of Ionizing Radiation
- > Introduction to Nuclear modeling
- > Introduction to Neutron physics
- > Radioprotection
- > Physico-Chemistry of Environment
- > Introduction to Nuclear Technology
- > Nuclear Reactions and Radiations
- > Mathematical Tools and Computer Simulation
- > Dosimetry
- > Medical Imaging Techniques

Management modules:

- > Nuclear: Management, Safety and Society
 - > Energy mix and energetic transition
 - > Environmental Management and Strategy of sustainability
- Company visits, Scientific seminars, Technical projects, Generic methods for Engineers, French language & culture
- #### Professional coaching (Student centred process of reflection on competencies and professional objectives)
- > 6-month MSc thesis in Industry or research lab

ADMISSION REQUIREMENTS

This Master is open to applicants with at least a scientific Bachelor of Science degree in a scientific discipline such as Nuclear, Chemistry, Physics, Chemistry, Electrical, Mechanical, Chemical, Energy, Environmental or Civil Engineering. Possible admission directly in the 2nd year for students who have a 4-year Bachelor degree or first year of Master in Nuclear Engineering or Nuclear Physics.

LANGUAGE REQUIREMENTS

English

- > Mother tongue or
 - > Bachelor degree taught in English or
 - > English test such as TOEFL IBT 80, IELTS 6.0, TOEIC 750, Cambridge
- No prerequisite in French

APPLYING

Apply at
<https://sneam.imt-atlantique.fr>
Applications are opened from October to May each year.

STRONG POINTS OF THE SCHOOL

- MSc accredited by the Ministry of Higher Education and Research
- > International Faculty
 - > Masters taught entirely in English and in small groups
 - > Strong links with the industries
 - > 6-month master thesis in industry or in a research lab
 - > Intercultural seminars
 - > Free French language courses
 - > Master boosted by a research department
 - > An international team for international students
 - > A quality chart to welcome international students
 - > Nantes airport/train station pick up
 - > Accommodation available on campus
 - > Scholarship based on excellence.
 - > French Summer School program in July and August for students who wish to improve French language and culture skills.

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COMPETENCES ACQUIRED

- > Acquire the basic scientific knowledge relative to nuclear technologies, necessary for understanding their utility and danger in medical applications.
- > Develop competences in beams production and qualification.
- > Master the operational techniques and strategies for the management of a project in nuclear medicine. Implement appropriate solutions through projects in/with industry.
- > Develop competences in radioprotection and nuclear waste management in the medical environment.
- > Build contacts with a large number of international key players in the field.
- > Develop an awareness of societal considerations related to nuclear medicine.

TYPICAL JOBS

- > Project engineer related to medical installations.
- > Safety engineer in medical installations.
- > Operation engineer of medical installations (radiology equipments, accelerators...).
- > Research scientist and development engineer for medical installations.

COST

Participation cost: 12 000 € / year

SCHOLARSHIPS

Special rates for :

- > European students from the Erasmus zone (6 000 € / year)
- > EU Graduate students from our partner universities (3 000 € / year)
- > EU students met at Education fairs (5 400 € / year)
- > excellent EU applications or recommended EU applications (2 600 € / year)
- > Non-EU students graduated from our partner universities (6 500 € / year)
- > Non-EU students met at Education fairs (9 600 € / year)
- > Non-EU Excellent applications or recommended applications (6 000 to 9 000 € / year)
- > Double-Degree students (4 500 € / year)
- > Possible Industrial sponsorship.

CALENDAR

One intake per year in September.

Year 1: Two academic semesters on Nantes campus

Year 2: One academic semester on Nantes campus + 6 month Master thesis in industry or in a research lab.

LODGING

The student's residence (called «MDE») located on campus offers furnished individual rooms. They are 18m2 and equipped with a private bathroom and a small kitchen.

Some rooms for couples are also available. The standard size is 30m2, including a living room and a separate bedroom.

housing-nantes@imt-atlantique.fr

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DETAILS OF SCHOOL

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